(FILE 'USPAT' ENTERED AT 17:38:54 ON 30 JUL 1997)

L1	166	S	LAMINARIN?
L2	405	S	GLUCANASE#
L3	36	S	L2 (10A) L1
L4	101	S	"BETA-1,6"
L5	405	S	GLUCANASE#
L6	5	S	L4 (5A) L5
L7	119	S	LAMINARIN
L8	34	S	L7 AND L2
L9	7	S	L7 (10A)

(FILE 'USPAT' ENTERED AT 16:52:33 ON 30 JUL 1997)

L1 405 S GLUCANASE#

L2 21783 S YEAST#

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     (FILE 'HOME' ENTERED AT 09:25:09 ON 31 JUL 1997)

     FILE 'REGISTRY' ENTERED AT 09:25:32 ON 31 JUL 1997
L1             1 S GLUCANASE/CN
L2           563 S GLUCANASE
L3             0 S .BETA.1,6 GLUCANASE
L4             1 S .BETA.1,6
L5             1 S BETA 1,6 GLUCANASE
                 SEL L5
L6            18 S BETA 1,3 GLUCAN
L7             0 S BETA 1,3 GLUCAN/CN
L8             1 S LAMINARIN/CN
                 SEL L8

     FILE 'CA, BIOSIS, USPATFULL, WPIDS' ENTERED AT 09:36:08 ON 31 JUL
     1997
L9            88 FILE CA
L10           34 FILE BIOSIS
L11            7 FILE USPATFULL
L12           16 FILE WPIDS
     TOTAL FOR ALL FILES
L13          145 S E1-E3
L14          899 FILE CA
L15          552 FILE BIOSIS
L16           53 FILE WPIDS
     TOTAL FOR ALL FILES
L17         1504 S E4-E7
L18           18 FILE CA
L19            7 FILE BIOSIS
L20            0 FILE WPIDS
     TOTAL FOR ALL FILES
L21           25 S L17 AND L13

     FILE 'CA, BIOSIS, USPATFULL, WPIDS' ENTERED AT 09:57:05 ON 31 JUL
     1997
L22           18 FILE CA
L23            7 FILE BIOSIS
L24            1 FILE USPATFULL
L25            0 FILE WPIDS
     TOTAL FOR ALL FILES
L26           26 S L21
L27           20 DUP REM L26 (6 DUPLICATES REMOVED)

=> d ibib ab 1-20


L27  ANSWER 1 OF 20  CA  COPYRIGHT 1997 ACS
ACCESSION NUMBER:        127:62983  CA
TITLE:                   Effect of carbon source on extracellular
                         (1.fwdarw.3)- and (1.fwdarw.6)-.beta.-glucanase
                         production by Acremonium persicinum
AUTHOR(S):               Pitson, Stuart M.; Seviour, Robert J.;
                         Mcdougall, Barbara M.
CORPORATE SOURCE:        Biotechnology Research Centre, La Trobe
                         University Bendigo, Victoria, 3550, Australia
SOURCE:                  Can. J. Microbiol. (1997), 43(5), 432-439
                         CODEN: CJMIAZ; ISSN: 0008-4166
PUBLISHER:               National Research Council of Canada
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DOCUMENT TYPE: Journal
LANGUAGE: English
AB The effect of carbon source on the levels of three (1.fwdarw.3)-.beta.-glucanases and a (1.fwdarw.6)-.beta.-glucanase in the culture filtrates of the filamentous fungus Acremonium persicinum was investigated. All four enzymes were produced during growth of the fungus on (1.fwdarw.3)-, (1.fwdarw.6)-, and (1.fwdarw.3)(1.fwdarw.6)-.beta.-glucans as well as .beta.-linked oligoglucosides. However, only one (1.fwdarw.3)-.beta.-glucanase and the (1.fwdarw.6)-.beta.-glucanase were detected during growth on a range of other carbon sources including glucose, CM-cellulose, and the .alpha.-glucan pullulan. The presence of glucose in the medium markedly decreased the prodn. of all four glucanases, although the concn. required to effect complete repression of enzyme levels varied for the different enzymes. Similar repressive effects were also obsd. with sucrose, fructose, and galactose. The most likely explanations for these observations are that the synthesis of the (1.fwdarw.6)-.beta.-glucanase and one of the (1.fwdarw.3)-.beta.-glucanases is controlled by carbon catabolite repression, while the remaining two (1.fwdarw.3)-.beta.-glucanases are inducible enzymes subject to carbon catabolite repression.

L27 ANSWER 2 OF 20 CA COPYRIGHT 1997 ACS
ACCESSION NUMBER: 126:222711 CA
TITLE: Production of .beta.-glucan degrading enzymes by Acremonium and Cephalosporium species
AUTHOR(S): Pitson, S. M.; Seviour, R. J.; Mcdougall, B. M.
CORPORATE SOURCE: Biotechnology Research Centre, La Trobe University, Victoria, 3550, Australia
SOURCE: Mycol. Res. (1997), 101(2), 153-158
CODEN: MYCRER; ISSN: 0953-7562
PUBLISHER: Cambridge University Press
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Thirty-one isolates of the form genera Acremonium and Cephalosoporium were screened for their ability to excrete enzymes capable of degrading .beta.-glucans. Most produced both (1 .fwdarw. 3)- and (1 .fwdarw. 6)-.beta.-glucanases together, although the yields varied with carbon source used. Surprisingly, higher yields of (1 .fwdarw. 3)-.beta.-glucose were often seen from isolates grown on pustulan, a (1 .fwdarw. 6)-.beta.-glucan which is not hydrolyzed by these enzymes. Lower enzyme yields were generally obtained with glucose than with either **laminarin**, a (1 .fwdarw. 3)-.beta.-glucan or pustulan as carbon sources, suggesting regulation of synthesis by either catabolite repression and/or induction. However, a few isolates, most notably Cephalosporium sp. OXF C13 and Acremonium strictum appeared to have some constitutive-.beta.-glucanase activity. Most of the isolates screened were only very weakly cellulolytic against CM-cellulose or filter paper as substrates.

L27 ANSWER 3 OF 20 CA COPYRIGHT 1997 ACS
ACCESSION NUMBER: 124:312149 CA
TITLE: Glucanolytic Actinomycetes antagonistic to Phytophthora fragariae var. rubi, the causal agent of raspberry root rot
AUTHOR(S): Valois, Diane; Fayad, Karine; Barasubiye, Tharcisse; Garon, Marie; Dery, Claude; Brzezinski, Ryszard; Beaulieu, Carole
CORPORATE SOURCE: Group Recherche Biologie Acti nomycetes, Universite de Sherbrooke, Sherbrooke, PQ, J1K 2R1, Can.
SOURCE: Appl. Environ. Microbiol. (1996), 62(5), 1630-1635
CODEN: AEMIDF; ISSN: 0099-2240

DOCUMENT TYPE: Journal
LANGUAGE: English
AB A collection of about 200 actinomycete strains was screened for the ability to grow on fragmented Phytophthora mycelium and to produce metabolites that inhibit Phytophthora growth. Thirteen strains were selected, and all produced .beta.-1,3-, .beta.-1,4-, and .beta.-1,6-glucanases. These enzymes could hydrolyze glucans from Phytophthora cell walls and cause lysis of Phytophthora cells. These enzymes also degraded other glucan substrates, such as cellulose, **laminarin**, pustulan, and yeast cell walls. Eleven strains significantly reduced the root rot index when inoculated on raspberry plantlets.

L27 ANSWER 4 OF 20 CA COPYRIGHT 1997 ACS DUPLICATE 1
ACCESSION NUMBER: 125:52101 CA
TITLE: Purification and characterization of an extracellular (1 .fwdarw. 6)-.beta.-glucanase from the filamentous fungus Acremonium persicinum
AUTHOR(S): Pitson, Stuart M.; Seviour, Robert J.; McDougall, Barbara M.; Stone, Bruce A.; Sadek, Maruse
CORPORATE SOURCE: Biotechnol. Res. Cent., La Trobe Univ. Bendigo, Bendigo, 3550, Australia
SOURCE: Biochem. J. (1996), 316(3), 841-846
CODEN: BIJOAK; ISSN: 0264-6021
DOCUMENT TYPE: Journal
LANGUAGE: English
AB An endo-**1,6-.beta.-glucanase** (I) was isolated from the culture filtrates of A. persicinum and purified by (NH4)2SO4 pptn. followed by anion-exchange and gel-filtration chromatog. SDS-PAGE of purified I gave a single band with an apparent mol. wt. of 42.7 kDa. I was a nonglycosylated, monomeric protein with a pI of 4.9 and pH optimum of 5.0. I hydrolyzed (1 .fwdarw. 6)-.beta.-glucans (pustulan and lutean), initially yielding a series of (1 .fwdarw. 6)-.beta.-linked oligoglucosides, consistent with endohydrolytic action. Final hydrolysis products from these substrates were gentiobiose and gentiotriose, with all products released as .beta.-anomers, indicating that the enzyme acts with retention of configuration. Purified I also hydrolyzed Eisenia bicyclis **laminarin**, liberating glucose, gentiobiose, and a range of larger oligoglucosides, through the apparent hydrolysis of (1 .fwdarw. 6)-.beta.- and some (1 .fwdarw. 3)-.beta.-linkages in this substrate. The Km values for pustulan, lutean, and **laminarin** were 1.28, 1.38, and 1.67 mg/mL, resp. I was inhibited by N-acetylimidazole, N-bromosuccinimide, dicyclohexylcarbodiimide, Woodward's Regent K, 2-hydroxy-5-nitrobenzyl bromide, KMnO4, and some metal cations; however, D-glucono-1,5-lactone and EDTA had no effect.

L27 ANSWER 5 OF 20 CA COPYRIGHT 1997 ACS DUPLICATE 2
ACCESSION NUMBER: 123:79314 CA
TITLE: Characteristics and role of .beta.-glucanase enzymes associated with blastospore formation in Saccharomycopsis fibuligera NCYC 451
AUTHOR(S): Mulenga, D. K.; Berry, D. R.
CORPORATE SOURCE: Dep. Bioscience and Biotechnology, Univ. Strathclyde, Scotland, UK
SOURCE: Microbios (1995), 82(331), 75-86
CODEN: MCBIA7; ISSN: 0026-2633
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The .beta.-glucanase activities present in cell-free medium during growth and blastospore formation by Saccharomycopsis fibuligera were

monitored. The .beta.-1,3- and **.beta.-1, 6-glucanase** activities increased at the time of blastospore formation. These enzymes were characterized using DEAE Sepharose and gel filtration through a Sephacryl S-300 column. The .beta.-1,3- and **.beta.-1,6- glucanase** activities give sep. peaks both by ion exchange chromatog. and by gel filtration indicating the presence of at least two sep. enzymes. The **.beta.-1,6- glucanase** had a mol. wt. of 43 kD by gel filtration, whereas the .beta.-1,3-glucanase gave two peaks at 150 and 280 kD. Both .beta.-1,3-glucanase peaks were active against **laminarin**, but only the 280 kD fraction was active against p-nitrophenylglucoside. It was not possible to break down either mycelial or blastospore cell wall material using these enzymes either singly or in combination, although some release of glucose and reducing sugar was obsd.

L27 ANSWER 6 OF 20 CA COPYRIGHT 1997 ACS DUPLICATE 3
ACCESSION NUMBER: 122:53919 CA
TITLE: Specificity of a .beta.-glucan receptor on macrophages from Atlantic salmon (Salmo salar L.)
AUTHOR(S): Engstad, Rolf E.; Robertsen, Boerre
CORPORATE SOURCE: The Norwegian College of Fishery Science, University of Tromso, Tromso, N-9037, Norway
SOURCE: Dev. Comp. Immunol. (1994), 18(5), 397-408
CODEN: DCIMDQ; ISSN: 0145-305X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB This study was undertaken to study the specificity of a .beta.-glucan receptor on Atlantic salmon macrophages. Previous in vitro studies have shown that Atlantic salmon macrophages express a receptor that rapidly recognizes and mediates uptake of nonopsonized .beta.-glucan particles. The ingestion of particles was shown to be inhibited by preincubating the macrophages with glucans contg. .beta.-1,3-linkages, but not by glucans contg. other linkages. Small oligomers from formolyzed .beta.-glucan particles, and linear .beta.-1,3-linked oligomers with a d.p. (DP) .gtoreq. 3, were efficient inhibitors of uptake of glucan particles. Oligomers from .beta.-1,6-linked pustulan, or small size oligomers with linkages other than .beta.-1,3, were not able to inhibit uptake of glucan particles. The inhibitory effect of **laminarin** and laminariheptaose was abolished by degrading the nonreducing terminal ends by sodium periodate treatment. The inhibitory effect of **laminarin** was regained by a complete Smith degrdn.; i.e., periodate oxidn. followed by redn. and hydrolysis. Modification of the reducing end of laminariheptaose had no effect on its ability to inhibit uptake. Furthermore, it was shown that periodate-oxidized glucan particles were not taken up by salmon macrophages, and that the uptake was regained when the particles were hydrolyzed to recover the nonreducing terminal end. Lastly, it was shown that endo-**.beta.-1,6-glucanase** treatment of the yeast glucan particles did not reduce uptake, confirming that .beta.-1,6-linkages are not involved in the recognition. These results suggest that Atlantic salmon macrophages possess a receptor that may recognize even very short .beta.-1,3-linked glucosyl chains extending from yeast cell walls.

L27 ANSWER 7 OF 20 CA COPYRIGHT 1997 ACS
ACCESSION NUMBER: 122:181678 CA
TITLE: Isolation and characterization of a unique endo-**.beta.-1,6-glucanase** from the yeast Saccharomycopsis fibuligera NCYC 451
AUTHOR(S): Mulenga, D. K.; Berry, D. R.

CORPORATE SOURCE: Dep. Biosci. Biotechnol., Univ. Strathclyde, Glasgow, G1 1XW, UK
SOURCE: Microbios (1994), 80(324), 143-54
CODEN: MCBIA7; ISSN: 0026-2633
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A .beta.-glucanase enzyme has been described which has .beta.-1,6 activity but no .beta.-1,3 activity. It was isolated and purified from cell free ext. and culture free medium of Saccharomycopsis fibuligera by a combination of techniques that included adsorption on DEAE-Sepharose and gel filtration through a Sephacryl S-300 column. The extracellular endo-**.beta.-1, 6-glucanase** had similar physicochem. properties to those of the intracellular one. The intracellular enzyme behaved as an acidic protein with pI 3.95. It had an optimum pH of 5.5 and optimum temp. of 50.degree.. The enzyme was specific for .beta.-1,6-glucosidic linkages by an endo-acting mechanism. The mol. wt. of the intracellular enzyme was estd. at 51 kDa from gel filtration compared with 43 kDa for the extracellular enzyme.

L27 ANSWER 8 OF 20 CA COPYRIGHT 1997 ACS DUPLICATE 4
ACCESSION NUMBER: 120:318103 CA
TITLE: Production, purification, and characterization of an extracellular endo-.beta.-1,3-glucanase from a monokaryon of Schizophyllum commune ATCC 38548 defective in exo-.beta.-1,3-glucanase formation
AUTHOR(S): Prokop, Andreas; Rapp, Peter; Wagner, Fritz
CORPORATE SOURCE: Inst. Biochem. Biotechnol., Tech. Univ. Braunschweigh, Braunschweig, D-3300, Germany
SOURCE: Can. J. Microbiol. (1994), 40(1), 18-23
CODEN: CJMIAZ; ISSN: 0008-4166
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Prodn. of extracellular .beta.-1,3-glucanase activity by a monokaryotic Schizophyllum commune strain was monitored and results indicated that the .beta.-glucanase activity consisted of an endo-.beta.-1,3-glucanase activity, besides a negligible amt. of .**beta.-1,6-glucanase** and .beta.-glucosidase activity. Unlike the .beta.-1,3-glucanase prodn. of the dikaryotic parent strain S. commune ATCC 38548, the .beta.-1,3-glucanase formation of the monokaryon was not regulated by catabolite repression. The endo-.beta.-1,3-glucanase of the monokaryon was purified from the culture filtrate by lyophilization, anion exchange chromatog. on Mono Q, and gel filtration on Sephacryl S-100. It appeared homogeneous on SDS-PAGE with a mol. mass of 35.5 kDa and isoelec. point was 3.95. The enzyme was only active toward glucans contg. .beta.-1,3-linkages, including lichenan, a .beta.-1,3-1,4-D-glucan. It attacked **laminarin** in an endo-like fashion to form laminaribiose, laminaritriose, and high oligosaccharides. While the extracellular .beta.-glucanases from the dikaryotic S. commune ATCC 38548 degraded significant amts. of schizophyllan, the endo-.beta.-1,3-glucanase from the monokaryon showed greatly reduced activity toward this high mol. mass .beta.-1,3-/.beta.-1,6-glucan. The Km of the endoglucanase, using **laminarin** as substrate, was 0.28 mg/mL. Optimal pH and temp. were 5.5 and 50 .degree.C, resp. The enzyme was stable between pH 5.5 and 7.0 and at temps. below 50 .degree.C. The enzyme was completely inhibited by 1 mM Hg2+. Growth of the monokaryotic S. commune strain was not affected by its constitutive endo-.beta.-1,3-glucanase formation.

L27 ANSWER 9 OF 20 CA COPYRIGHT 1997 ACS
ACCESSION NUMBER: 119:155803 CA
TITLE: Regulation of .beta.-1,3-glucanase synthesis in

Trichoderma harzianum
AUTHOR(S): Rudawska, Maria; Kamoen, Oswa[redacted]
CORPORATE SOURCE: Inst. Dendrol., Pol. Acad. Sci., Kornik, 62-035, Pol.
SOURCE: Arbor. Kornickie (1992), 37, 51-9
CODEN: ARKOA9; ISSN: 0066-5878
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The antagonistic fungus T. harzianum when grown in a synthetic liq. medium produced enzymes with high .beta.-1,3- and low **.beta.-1,6-glucanase** activity. The enzymes were sepd. by Sephacryl-S 200 column chromatog. The .beta.-1,3-glucanase of T. harzianum appears to be subjected to a dual regulation, viz., catabolic repression and substrate induction. Glucose had a repressive effect on .beta.-1,3-glucanase activity when the fungus was incubated in a high glucose medium. After removal into a low glucose medium, the catabolic repression persisted for several days. Substrate induction in the culture of T. harzianum may be evoked by an exogenously supplied glucan, **laminarin**. **Laminarin** stimulated glucanase prodn. only when glucose was completely exhausted. The results are discussed in the context of better understanding of glucanase regulation, which may be helpful for increasing enzyme activity and antagonistic capacity of Trichoderma spp.

L27 ANSWER 10 OF 20 CA COPYRIGHT 1997 ACS
ACCESSION NUMBER: 115:131617 CA
TITLE: Biosynthesis of .beta.-glucanase by marine bacterium Cytophaga
AUTHOR(S): Kondrat'eva, L. M.; Vakhrusheva, E. V.
CORPORATE SOURCE: Inst. Water Ecol. Probl., Khabarovsk, USSR
SOURCE: Mikrobiol. Zh. (Kiev) (1991), 53(1), 53-8
CODEN: MZHUDX; ISSN: 0201-8462
DOCUMENT TYPE: Journal
LANGUAGE: Russian
AB **1,6-.beta.-Glucanase** has been isolated from Cytophage sp. NK-5. **Laminarin** (1,3; 1,6-.beta.-glucan) and pustulan (1,6-.beta.-glucan) were used as a source of carbon. The enzyme activity has been shown to depend on conditions of cultivation (glucan structure, peptone content in nutrient medium). It is detd. that the max. glucanase activity is developed under conditions similar to those in sea water or in the medium contg. 3% marine salt. Although the largest yield of bacterial biomass has been obsd. at 25.degree., the temp. optimum of the enzyme activity was at 50.degree.. The enzyme activity grew in the alk. zone of pH and also in the presence of 1 mM Ca2+ and Mg2+ ions, while Hg+, Pb+ and Fe3+ ions of the same concns. inhibited it.

L27 ANSWER 11 OF 20 CA COPYRIGHT 1997 ACS
ACCESSION NUMBER: 112:33586 CA
TITLE: Distribution of some glucanases in marine invertebrates
AUTHOR(S): Sundukova, E. V.; Elyakova, L. A.
CORPORATE SOURCE: Lab. Enzyme Chem., Pac. Inst. Bioorg. Chem., Vladivostok, 690032, USSR
SOURCE: Biol. Morya (Vladivostok) (1989), (4), 78-80
CODEN: BIMOD4; ISSN: 0320-9695
DOCUMENT TYPE: Journal
LANGUAGE: Russian
AB Exts. of organs (stomach, liver, and cryst. style) of >130 different marine invertebrates, mainly Mollusca, were examd. for their ability to split (1.fwdarw.3)- and (1.fwdarw.6)-.beta.-glucans, mixed (1.fwdarw.3),(1.fwdarw.4)- and (1.fwdarw.3),(1.fwdarw.6)-.beta.-glucans, and (1.fwdarw.3),(1.fwdarw.4)-.beta.-xylan. Exts. from arthropod digestive tract were active on the glucan substrates

pachyman, aubazid[illegible], yeast glucan, and lichenan s[illegible]trates, but not on **laminaran** or [illegible]an, whereas mollusk exts. were [illegible]ost active on **laminaran**, pachyman, and lichenan substrates.

L27 ANSWER 12 OF 20 CA COPYRIGHT 1997 ACS
ACCESSION NUMBER: 102:2964 CA
TITLE: Synthesis and regulation of Bacillus circulans WL-12 1,3-.beta.-D-glucanases
AUTHOR(S): Esteban, Rosa; Nebreda, Angel R.; Villa, Tomas G.
CORPORATE SOURCE: Fac. Biol., Univ. Salamanca, Salamanca, Spain
SOURCE: J. Gen. Microbiol. (1984), 130(10), 2483-7
CODEN: JGMIAN; ISSN: 0022-1287
DOCUMENT TYPE: Journal
LANGUAGE: English
AB B. circulans WL-12 1,3-.beta.-D-glucanases are extracellular enzymes subject to catabolite repression by glucose and synthesized after the depletion of this sugar. Utilization of other complex C sources (1,3-.beta.-D-glucan from bakers' yeast, **laminarin**, or xylan) resulted in a 3-4-fold increase in the formation of these enzymes, suggesting that they are derepressible and inducible. Under induction conditions 4 different enzymes were detected by isoelec. focusing that were numbered I, II, III, and IV, according to their isoelec. points (3.7, 4.6, 5.5, and 6.5 resp.). Glucanase II was inducible whereas I, III, and IV were both derepressible and inducible. In addn., the synthesis of glucanase II was blocked by cyclic AMP. The 4 enzyme forms displayed an endo-attack on **laminarin** and yielded similar products, but differed in some physicochem. parameters such as mol. wt., Km, and lytic activity.

L27 ANSWER 13 OF 20 CA COPYRIGHT 1997 ACS DUPLICATE 5
ACCESSION NUMBER: 94:43818 CA
TITLE: Distribution of .beta.-glucanases within the genus Bacillus
AUTHOR(S): Martin, D. F.; Priest, F. G.; Todd, C.; Goodfellow, M.
CORPORATE SOURCE: Dep. Brew. Biol. Sci., Heriot-Watt Univ., Edinburgh, EH1 1HX, Scot.
SOURCE: Appl. Environ. Microbiol. (1980), 40(6), 1136-8
CODEN: AEMIDF; ISSN: 0099-2240
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Some 368 strains from 36 species of Bacillus were screened for the secretion of .beta.-glucanases. The (1.fwdarw.6)-.beta.-glucanases active on pustulan were produced by a minority of the organisms studied (4%), but (1.fwdarw.3)-.beta.-glucanases, which hydrolyzed **laminarin** and pachyman, were secreted by 56 and 44% of the strains, resp.

L27 ANSWER 14 OF 20 CA COPYRIGHT 1997 ACS
ACCESSION NUMBER: 91:54587 CA
TITLE: Immobilization of lytic enzymes and their application in the lysis of yeast cells
AUTHOR(S): Galas, E.; Bielecki, S.; Antczak, T.
CORPORATE SOURCE: Inst. Tech. Biochem., Lodz Tech. Univ., Lodz, PL-90-924, Pol.
SOURCE: Prepr. - Eur. Congr. Biotechnol., 1st (1978), 118-22. DECHEMA: Frankfurt/Main, Ger.
CODEN: 40SBAD
DOCUMENT TYPE: Conference
LANGUAGE: English
AB The lysis of viable cells of Saccharomyces cerevisiae, S. carlsburgensis, and dried or viable cells of Candida utilis by lytic enzymes produced by Streptomyces species 1228 was investigated. The enzymes included 2 .beta.-1,3-glucanases, a .**beta**.-

1,6-glucanase, and a protease and were immobilized in a collagen membrane. With buffered **laminarin** or C. utilis cells as substrates, the best activities of the lytic enzyme-collagen complexes were obsd. after 3-fold impregnation of the collagen membrane in the enzyme soln. Treatment of the complex with 10% glutaraldehyde soln. or UV irradn. had a pos. effect on immobilized enzyme activity and stability. Use of the enzyme-collagen membrane in a biocatalytic reactor made possible the continuous hydrolysis of **laminarin** and yeast cells for up to 3 wk.

L27 ANSWER 15 OF 20 BIOSIS COPYRIGHT 1997 BIOSIS
ACCESSION NUMBER: 77:217000 BIOSIS
DOCUMENT NUMBER: BA64:39364
TITLE: LAMINARINASE EC-3.2.**1.6** **BETA GLUCANASE** ACTIVITY IN BACTEROIDES FROM THE HUMAN COLON.
AUTHOR(S): SALYERS A A; PALMER J K; WILKINS T D
SOURCE: APPL ENVIRON MICROBIOL 33 (5). 1977 1118-1124. CODEN: AEMIDF ISSN: 0099-2240
LANGUAGE: Unavailable

AB **Laminarin**, a .beta.(1 .fwdarw. 3)-glucan similar to those found in plant cell walls, is fermented by some species of anaerobic bacteria from the human colon. Laminarinase (EC 3.2.1.6) and .beta.-glucosidase (EC 3.2.1.21) activities were determined in strains representing B. thetaiotaomicron, B. distasonis, and an unnamed DNA homology group of B. fragilis. In all 3 spp., laminarinase activity was inducible by **laminarin** and was predominantly cell bound. The products of laminarinase activity varied with each species. In the case of B. thetaiotaomicron, the major product of **laminarin** hydrolysis was glucose (70-90%), and there were small amounts of laminaribiose (G2) and oligomers of glucose as high as G4. In the case of group 0061-1, glucose (40-50%) and oligomers of glucose as high as G6 were found. The laminarinase of B. distasonis differed from the laminarinases of the other 2 spp. in that it mainly produced oligomers of glucose (G2-G5). .beta.-Glucosidase activity was also found in all 3 spp. .beta.-Glucosidase was induced by glucose-containing disaccharides and by **laminarin**. The .beta.-glucosidases of the 3 Bacteroides spp. differed in the level of activity, induction pattern and sensitivity to inhibition by D-glucono-1,5-lactone.

L27 ANSWER 16 OF 20 CA COPYRIGHT 1997 ACS DUPLICATE 6
ACCESSION NUMBER: 86:68198 CA
TITLE: Production and catabolite repression of Penicillium italicum .beta.-glucanases
AUTHOR(S): Santos, Tomas; Villanueva, Julio R.; Nombela, Cesar
CORPORATE SOURCE: Fac. Sci., Univ. Salamanca, Salamanca, Spain
SOURCE: J. Bacteriol. (1977), 129(1), 52-8 CODEN: JOBAAY
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The filamentous fungus P. italicum, grown in a defined liq. medium, produced .beta.-1,3-glucanase, which remained essentially bound to the cells, and .**beta.-1,6-glucanase**, an essentially extracellular enzyme. When glucose was depleted from the medium, when a limited concn. of glucose (0.2%) was maintained, or when the C source was galactose (3%) or lactose (3%), a significant increase in the sp. activity of .beta.-1,3-glucanase in cell exts. took place. This was paralleled by a very slow rate of growth, and under glucose limitation, the appearance of .beta.-1,3-glucanase in the medium was also obsd. On the other hand, when an excess of glucose, fructose, or sucrose was present, the sp. activity remained const. and active growth was

promoted. **Laminarin**, cellobiose, gentiobiose, and isolated P. italicum walls did not significantly induce .beta.-1,3-glucanase synthesis to a level beyond that attained by glucose limitation. A similar behavior was obsd. for **.beta.-1,6-glucanase**. .beta.-1,3-Glucanase and **.beta.-1,6-glucanase** are therefore constitutive enzymes subjected to catabolite repression. The results are discussed in the context of the possible functions that have been suggested for glucanases and related enzymes.

L27 ANSWER 17 OF 20 CA COPYRIGHT 1997 ACS
ACCESSION NUMBER: 84:146640 CA
TITLE: Lysis of yeast cell walls. Lytic .beta.-(1 .fwdarw. 6)-glucanase from Bacillus circulans WL-12
AUTHOR(S): Rombouts, Frank M.; Phaff, Herman J.
CORPORATE SOURCE: Dep. Food Sci. Technol., Univ. California, Davis, Calif., USA
SOURCE: Eur. J. Biochem. (1976), 63(1), 109-20
CODEN: EJBCAI
DOCUMENT TYPE: Journal
LANGUAGE: English
AB When grown in a mineral medium with yeast cell walls or yeast glucan as the sole C source, Bacillus circulans WL-12 produces wall-lytic enzymes in addn. to non-lytic .beta.-(1 .fwdarw. 3)- and .beta.-(1 .fwdarw. 6)-glucanases. The lytic enzyme were isolated from the culture liq. by adsoprtion on insol. yeast glucan in batch operation. After digestion of the glucan, the mixt. of enzymes was chromatographed on hydroxylapatite on which the lytic activity could be resolved into 1 lytic .beta.-(1 .fwdarw. 6)-glucanase and 2 lytic .beta.-(1 .fwdarw. 3)-glucanases. The lytic .beta.-(1 .fwdarw. 6)-glucanase was further purified by chromatog. over DEAE-agarose and CM-cellulose. Its specific activity on pustulan was 6.2 units/mg of protein. The enzyme moved as a single protein with a mol. wt. of 54,000 during Na dodecyl sulfate electrophoresis in slab gels. Hydrolysis of pustulan went through a series of oligosaccharides, leading to a mixt. of gentiotriose, gentiobiose, and glucose. The enzyme also produced small amts. of gentiobiose from **laminarin** and pachyman and on this basis its lytic activity on yeast cell walls was attributed to a debranching of the alkali-insol. .beta.-(1 .fwdarw. 3)-glucan in the wall. Low-mol.-wt. products from yeast cell walls included gentiotriose, gentiobiose and glucose but .beta.-(1 .fwdarw. 3)-linked oligosaccharides were not detected. The lytic .beta.-(1 .fwdarw. 6)-glucanase had and optimum pH of 6.0. Pustulan hydrolysis followed Michaelis-Menten kinetics. A Km of 0.29 mg pustulan/ml and a V of 9.1 microequivalents of glucose released min/mg of enzyme were calcd. The enzyme had no metal ion requirement. The lytic .beta.-(1 .fwdarw. 6)-glucanase differs in essence from the non-lytic .beta.-(1 .fwdarw. 6)-glucanase of the same organism by its pos. action on yeast cell walls and yeast glucan and its much lower specific activity on sol. pustulan.

L27 ANSWER 18 OF 20 CA COPYRIGHT 1997 ACS
ACCESSION NUMBER: 83:24853 CA
TITLE: Production of yeast lytic enzymes by a strain belonging to the genus Oerskovia. II. Culture conditions for the production of yeast lytic enzymes from Oerskovia species CK and some properties of the crude enzymes
AUTHOR(S): Obata, Takaji; Yamashita, Koichi; Nunokawa, Yataro
CORPORATE SOURCE: Natl. Res. Inst. Brew., Tokyo, Japan
SOURCE: Hakko Kogaku Zasshi (1975), 53(5), 256-63
CODEN: HKZAA2

DOCUMENT TYPE: Journal
LANGUAGE: Japanese
AB The culture filtrate of the CK strain of Oerskovia, exhibited high lytic activity toward logarithmic or stationary phase cells of many species of yeast, when the yeast cells were used as substrate. Culturing conditions of the CK strain giving the optimum prodn. of the cell wall lytic enzyme were investigated. It was found that glucan, the main component of yeast cell wall, and **laminarin** whose structure is similar to glucan, were effective induces of enzyme prodn. Addn. of NaNO3, KNO3, or (NH4)2HPO4 to the medium promoted the enzyme prodn., owing to maintenance of the broth pH around neutrality. The enzyme prodn. was also enhanced when the medium was sterilized at pH 11.0 and readjusted to pH 7.0. This enzyme prepn. showed .beta.-1,3-glucanase, .**beta**.-**1,6-glucanase**, mannanase, protease and amylase activities. Optimum pH and temp. of the lytic activity were 6.0-9.0 and 30-40.degree., resp. This lytic activity was stable at pH 6.0-10.0, but was completely lost on treatment at 50.degree. for 15 min. The activity was also severely inhibited by 10-4M HgCl2.

L27 ANSWER 19 OF 20 USPATFULL
ACCESSION NUMBER: 73:7055 USPATFULL
TITLE: LYSIS OF YEAST CELL WALLS
INVENTOR(S): Kitamura, Kunpei, Takasaki-shi, Japan
Kaneko, Tatsuhiko, Takasaki-shi, Japan
Yamamoto, Yasushi, Takasaki-shi, Japan
Kuroiwa, Yoshiro, Takasaki-shi, Japan
PATENT ASSIGNEE(S): Kirin Beer Kabushiki Kaisha, a.k.a., Kirin Brewery Co., Ltd., Tokyo, Japan (non-U.S. corporation)

	NUMBER	DATE	
PATENT INFORMATION:	US 3716452	730213	
APPLICATION INFO.:	US 70-73061	700917	(5)

DOCUMENT TYPE: Utility
PRIMARY EXAMINER: Shapiro, Lionel M.
LEGAL REPRESENTATIVE: Holman & Stern
NUMBER OF CLAIMS: 16
LINE COUNT: 568
CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AB An enzyme which is capable of lysing yeast cell walls is produced by microorganisms belonging to Arthrobacter luteus nov. sp. The enzyme has a unique activity for lysing cell walls of yeast dead or alive and in any stage of growth.

L27 ANSWER 20 OF 20 CA COPYRIGHT 1997 ACS
ACCESSION NUMBER: 70:54375 CA
TITLE: Enzymic hydrolysis of yeast cell walls. II. Purification of lytic enzymes
AUTHOR(S): Kuroda Akio; Tawada, Noriko; Tokumaru, Yoko
CORPORATE SOURCE: Kinki Yakult Mgf. Co., Nishinomiya, Japan
SOURCE: Hakko Kogaku Zasshi (1968), 46(11), 930-7
CODEN: HKZAA2
DOCUMENT TYPE: Journal
LANGUAGE: Japanese
AB An enzyme (I) which hydrolyzes yeast cell walls was obtained from the fungus Rhizopus and chromatog. purified by DEAE-Sephadex and CM-cellulose. In addn., .beta.-1,3-glucanase and .**beta**.-**1,6-glucanase** were sepd. by CM-cellulose chromatog. .beta.-1,3-Glucanase hydrolyzed **laminarin** to glucose by a random mechanism. .**beta**.-**1,6-Glucanase** hydrolyzed luteose almost completely to gentiobiose. I hydrolyzed both acetone-dried and heat-treated yeast cells. Neither .beta.-1,3-glucanase nor protease was

hydrolytic alone against yeast cells harvested in the logarithmic phase and treated with cysteine, but either was alone to hydrolyze the yeast cells when combined with .**beta**.-**1**,